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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/719,938  | 11/21/2003  | Shinichi Yoshimura   | 112857-443                  | 3627             |
| 29175 7590 03/22/2007<br>BELL, BOYD & LLOYD, LLP<br>P. O. BOX 1135<br>CHICAGO, IL 60690 |             |                      | EXAMINER<br>BLOOM, NATHAN J |                  |
|   |             |                      | ART UNIT<br>2624            | PAPER NUMBER     |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 03/22/2007 | PAPER         |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                               |                                  |  |
|------------------------------|-------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/719,938 | Applicant(s)<br>YOSHIMURA ET AL. |  |
|                              | Examiner<br>Nathan Bloom      | Art Unit<br>2624                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/10/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Instant claim 6 provides the signal output may be high for 5, 6, or 7 frames whereas claim 5 limits the high output to just 6 frames.

### *Claim Rejections - 35 USC § 101*

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent

Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs, which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

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In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 8 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 8 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed a computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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2. Claims 1, 3 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Wallace (US 2003/0179083).

Consider claim 1, an image processing apparatus, comprising: a reflector for reflecting emitted light (LED, or illuminator is item 40 of Fig. 1-4, paragraphs 0025-0029) changing with a predetermined pattern (Fig. 1-4, interior of vehicle is the reflector); an image capturing device for capturing an image of the reflected light reflected by the reflector (Fig. 4-5 and 11, paragraphs 0030-0033); a difference calculator for calculating a difference (Fig. 4-5, controller and memory perform "frame differencing" of 2 frames for each pixel forming a sample that is further compared to other samples, paragraphs 0034-0042), among  $2N$  consecutive frames, between a sum in recent  $N$  frames and a sum in other  $N$  frames for each pixel of the image of the reflected light, captured by the image capturing device; a comparator for comparing the difference calculated by the difference calculator, with a predetermined threshold (using controller of Fig.4 paragraphs 0043-0046 describe the comparison and thresholding); a signal processor for outputting one of a first signal and a second signal depending on a result of the comparison performed by the comparator (Fig 4-5, signal processor and determination step are combined in description, if threshold is met then it is determined that the alarm is to be activated (affirmative signal is sent) due to presence of intruder, paragraphs 0049-0051); a determination device for determining at a predetermined interval whether the signal output from the signal processor is a predetermined signal (the controller of paragraphs 0043-0046 is also the determination device and in paragraphs 0049-0051 the determination as shown in Fig. 5 object number 102 "Do Pixel Values Indicate Intrusion?" the determination is made, this determination is part of a loop which happens at a known interval based on the chosen interval for the light

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pulsations of step 86 of Fig. 5); and a detector for detecting an invader according to a result of the determination performed by the determination device (detector or alarm object 104 of Fig. 5 Wallace is actuated based on the determination signal of object 102).

Instant claim 3 further limits the apparatus of claim 1 wherein the value of N is 2. Wallace in paragraphs 0041-0044 teaches taking 4 consecutive images and comparing these 4 images as two sets of 2 images which Wallace refers to as samples.

Instant claim 7, describes the method accomplished by the apparatus of claim 1. The method steps are depicted in Fig. 5 and are further described in the passages listed as relevant to the apparatus claim's limitations.

Instant claim 8 describes the program that when implemented on a computer readable medium performs the differencing, comparison, signal processing, determining, and detection steps of the method of instant claim 1. Wallace discloses in paragraph 0034 that the controller is preferably a microcomputer programmed to perform the process of claim 5 including the "frame-differencing" algorithm. Thus Wallace has disclosed the implementation of the method as a program.

Instant claim 9 is encompassed by the limitations of instant claim 7 and hence is rejected by Wallace as per the rejection of instant claim 7.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace in view of Abe (US 6674893).

Instant claim 2 further limits the apparatus of claim 1 wherein the lighting apparatus is a floodlight. Wallace discloses an image processing apparatus of instant claim 1 wherein the lighting apparatus is a small laser beam or LED style light with low power consumption, because the particular application is for use in a low power system. Wallace does not teach the use of a floodlight to illuminate the area since this would require more power draw than desired. However, Abe discloses an image processing apparatus the illuminates an area and measures the reflected light for further processing. Abe, in lines 15-24 column 1 discloses the use of a spot-light or other projection light for projecting the light into the desired area, and in lines 8-14 of column 1 teaches the use of a projection light to measure luminance. It would have been obvious to one of ordinary skill in the art to combine Wallace with Abe to provide a desired amount of light for use in measuring the luminance of an object as is done in the alarm system described by Wallace.

5. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace in view of Mizui (US 5901236).

Instant claim 4 further limits the apparatus of claim 2 wherein a period of the emitted light changing with the predetermined patten is equal to the period of time of three in the image capturing device. As per rejection of instant claims 1 and 3, Wallace has disclosed the image processing apparatus but does not change the emitted light as a function of the number of frames,

but instead as is disclosed in paragraph 0055-0056 the light is emitted as a function of time depending on the desired temporal resolution of the system. Mizui teaches a method and apparatus for measuring position using a camera to measure the reflected light that is pulsed by a given source. Mizui discloses in lines 5-28 of column 2 the adjustment of the light as a function of the number of frames of the camera. Since Mizui and Wallace both teach systems for measuring the changes in reflected light it would have been obvious to one of ordinary skill in the art to combine the teaching of Mizui with Wallace to enhance the accuracy of the light sensing system as disclosed by Wallace.

Instant claim 5 further limits the apparatus of claim 4 wherein the determination device determines at an interval of six frames whether the signal output from the signal processor is a high-level signal. The high-level signal corresponds to a possible detected intrusion that is confirmed when the signal remains high for a series of several samples. Wallace discloses in paragraphs 0050-0052 a verification of the positive intrusion signal by looping it through the process of fig. 6 several times in order to ensure that the positive signal is not a false alarm. It would have been obvious to one of ordinary skill in that art that the number of samples (frames) or the amount of time that is allowed to pass in order to perform multiple checks for verification of the positive signal can be varied based on experimental results. Furthermore, the apparatus of claim 6 does not further limit the method of claim 5 but suggests the use of 5, 6, or 7 frames and also would have been obvious to one of ordinary skill in the art since it has been shown to have been obvious for 6 frames.

### *Conclusion*



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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wootton (US 5937092) is a light intrusion video alarm system that limits the false alarms by using a series of 3 frames (relevant to claims 5 and 6).

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu, can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan Bloom

NB

3/19/2007

JINGGE WU  
SUPERVISORY PATENT EXAMINER